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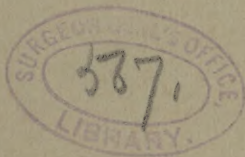
ACUTE OTITIS MEDIA AS A COM-
PLICATION OF TYPHOID FEVER.

BY

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REPRINTED FROM THE
New York Medical Journal
for June 6, 1896.



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ACUTE OTITIS MEDIA AS A COMPLICATION OF TYPHOID FEVER.*

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INFLAMMATION of the middle ear very rarely occurs as a primary disease; it occurs more frequently in a secondary form, or as a complication or sequela of some other disease. That it is a more frequent complication of typhoid fever than is generally supposed, I shall endeavor to demonstrate in this paper.

When we take into consideration the intimate relationship between the mucous membrane of the nose and nasopharynx, the Eustachian tube and middle ear, and the convenient pathway for bacteria from the throat or other parts of the respiratory system through the Eustachian tube to the tympanic cavity, it is not surprising that the proportion of cases is as large as it is.

Catarrhal inflammation of the fauces and the pharynx occurs in a large number of cases of typhoid fever, and frequently gives rise to a great deal of difficulty in swallowing. It is observed more frequently in some epidemics than in

* Read at the second annual meeting of the American Laryngological, Rhinological, and Otological Society, in New York, April 18, 1896.

others; sometimes it occurs so frequently that some writers have regarded it as a symptom rather than a complication of the disease. When this inflammation extends through the Eustachian tube to the middle ear it may give rise to temporary deafness, which usually passes off as the inflammation subsides, or it may develop into a suppurative otitis and lead to caries of the petrous portion of the temporal bone.

In order to gather some statistics on the subject, I sent circular letters to a number of prominent general practitioners who had large experience in the treatment of typhoid fever, and asked the following questions:

1. How many cases of typhoid fever have you had under your management?
2. How many of your cases were complicated by acute otitis media?
3. At what stage of the fever?
4. Was there any mastoid involvement?
5. Results of the otitis—whether perfect recovery as to hearing, etc.
6. Have you used large doses of quinine in the treatment of your cases?

In answer to the first question, I received enough replies to give me an aggregate of twelve hundred and twenty-eight cases of fever. Out of this number there were twenty-eight cases of acute otitis media purulenta reported. Transitory pain in the ear, with slight deafness for a few days, I did not take into consideration.

Of the aggregate number two hundred cases were from the records of the Mercy Hospital, Pittsburgh, treated in the past two years. Of this number there were six cases of purulent acute otitis, and under my care. Of the whole number, five hundred and seventy-five were cases from private practice. Out of this number there were eleven cases of otitis media—not quite two and a half per cent. Six

hundred and fifty-three were hospital cases, with seventeen cases of otitis, or a little more than two and a half per cent., making an average of all cases about two and a half per cent. Dr. Osler writes that during the six years ending May 15, 1895, there were three hundred and eighty-nine cases of typhoid fever in the Johns Hopkins Hospital, and that among those there were eight cases of acute otitis media; Dr. Laurence Turnbull, that out of an approximate aggregate of two hundred and fifty cases of typhoid fever he has had four cases of purulent otitis media. One writer replies that out of sixty-four hospital cases he has had three cases of otitis media. Very few general practitioners keep records of their cases of typhoid fever, and consequently statistics on the subject are necessarily meager.

A number whom I know to have had extensive experience in the treatment of cases of typhoid fever replied that they had never seen the complication. As regards the stage of the fever when this complication is apt to be developed, the replies were, from the end of the second to the fourth week, when the patient is usually in a semi-comatose condition, the capillary circulation is weak and sluggish, and the nasopharynx is filled with tenacious mucus which the patient is not able to expel. The Eustachian tube becomes filled with the same, and as a consequence the otitis is developed.

As regards mastoid involvement, I have been unable to gather any statistics on the subject; all the replies were in the negative. Of my own six cases, one developed an acute mastoiditis, which, however, was promptly relieved by an early and free Wilde's incision, more due to free bleeding than to anything else.

As regards the termination of the otitis, the replies were all favorable—no chronic aural discharge or impaired hearing resulting.

4 OTITIS MEDIA COMPLICATING TYPHOID FEVER.

It will be understood that in this paper I am not considering that form of deafness produced by involvement of the internal auditory apparatus which is not uncommon in typhoid fever and occasionally so disastrous to the hearing.

As regards quinine, we all know that if it is given in very large doses it will produce a congestion of the middle and internal auditory apparatus, and thinking that perhaps some of these cases of otitis might have been produced by the administration of quinine in very large doses during hyperpyrexia, I was led to ask the question. The replies were mostly in the negative. One gentleman who reported one hundred and seventy-five cases treated, with five cases of otitis as a complication, replied that it was his practice to use large doses of quinine during hyperpyrexia. Others reported that quinine was only used in tonic doses too small to in any way injure the hearing apparatus.

Causes.—Among the causes of this complication of typhoid fever could be mentioned exposure of the side of the head to a cold draught of air; carelessness in bathing the patient, using a bath of too low temperature, allowing the water to pass into the nose or into the external ear—all this at a time when the patient has no resisting power—will readily set up an attack of otitis media. But the most usual mode of invasion is by extension of the inflammation from the mouth and nasopharynx through the Eustachian tube to the tympanum, and whenever this inflammation is present in the nasopharynx the patient is in constant danger of otitis. That it is of a microbic origin has been demonstrated. Dr. Gorham Bacon, in his article on Acute Otitis Media, in Burnett's *System of Diseases of the Nose, Throat, and Ear*, mentions the fact that Netter, of Paris, has discovered four distinct forms of acute otitis media.

First. That due to the pyogenic streptococcus of Netter, Zaufal, Moos, Holst, and Dunin.

Secondly. That caused by the pneumococcus of Fraenkel, also recognized by Netter, Zaufal, and others.

Thirdly. That caused by the pneumobacillus of Friedlander and Zaufal.

Fourthly. Otitis associated with the presence of the pyogenic staphylococcus.

Also that Netter has found the *Staphylococcus aureus* associated with the streptococcus or the pneumococcus in four cases of acute otitis media.

In typhoid fever, and especially during the third or fourth week, when the secretions of the nose and nasopharynx are in an abnormal condition, these microbes multiply very rapidly, and it is therefore of the highest importance that the nose and nasopharynx be kept thoroughly antiseptic.

Symptoms — There are deep-seated pain and tenderness on pressure below the auricle, a feeling of fullness, pulsation, and in some cases tinnitus. On examination of the membrana tympani, vascular injection, especially along the handle of the malleus, and in some cases, though not in every one, bulging of the membrana tympani. There is also more or less well-marked deafness.

In some cases of typhoid fever there is a neuralgic condition of the middle ear in which the pain is very severe. Acute otitis, however, can be distinguished from this by the want of congestion of the membrana tympani in neuralgia, absence of pain on deep-seated pressure below the auricle, and the absence of other signs as recognized by the speculum. Neuralgic pain is also of a more paroxysmal nature. Very often, on account of the semi-comatose condition of the patient, the disease is not recognized until there is a rupture of the membrana tympani and the consequent discharge of pus. This rupture, as in acute otitis from other causes, may occur in a few hours after seizure,

but more frequently it occurs after the pain and other symptoms have lasted two or three days. If the membrana tympani is examined before the rupture takes place, bulging and excessive congestion of the membrana will be noticed. If, after the rupture, the pus is carefully syringed away, the ruptured spot, which we find in the posterior part of the membrane, above the centre and near the outer wall of the meatus, can generally be seen. This is where it usually occurs, and is therefore not difficult to heal if properly treated. We are all aware that we very seldom see a case of chronic purulent otitis which is attributed to typhoid fever as the cause. Should this rupture occur in Shrapnell's membrane, the prognosis as regards cure would be a more serious matter.

Inflammation of the mastoid process, as in all other cases of median otitis, is merely an extension of the suppurative process from the middle ear, and is a very rare complication if the primary otitis is properly managed.

Treatment.—As the object of this paper is to discuss the frequency of acute otitis as a complication of typhoid fever, a few words in regard to treatment will be all that is necessary. If the case is seen during the early or hyperæmic stage, it is my custom to apply a leech in front of the tragus; or, if the pain extends to the mastoid, it may be applied in that region. In addition, the instillation into the ear of a warm solution of boric acid, or gently syringing the ear with the same, may be followed by prompt relief, and in many cases prevent suppuration. In some of my cases the use of cold water through the Leiter coil has been beneficial. The ear should be frequently examined, and as soon as the bulging of the drumhead is found it should be incised; after this the secretion should be forced out by the Politzer method; this should be done at frequent intervals, and in addition the nose and nasopharynx

should be thoroughly sprayed with a warm saturated solution of boric acid in all cases where the patient is not too comatose to prevent its use. In most of the cases the discharge will cease in a few days with this kind of treatment; if not, then, after thoroughly cleansing and drying the ear, the insufflation lightly of boric acid or some other of the antiseptic powders will usually result in a cure.

My studies have led me to believe that very few cases of acute otitis media when complicating typhoid fever terminate unfavorably—that is, in nearly all cases perfect hearing is the result; also, that mastoiditis is very rare unless the case is not properly treated during its earlier stage; and that in all cases of typhoid fever the condition of the nose and nasopharynx should be carefully examined at frequent intervals, and kept thoroughly antiseptic by either a mild bichloride of mercury or saturated solution of boric acid, used with the atomizer, if the condition of the patient is such as to make it possible.

NO. 515 PENN AVENUE.

The New York Medical Journal.

A WEEKLY REVIEW OF MEDICINE.

EDITED BY

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PUBLISHED BY

D. APPLETON & CO., 72 Fifth Avenue, New York.

